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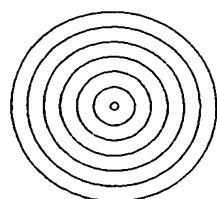
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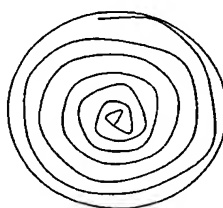
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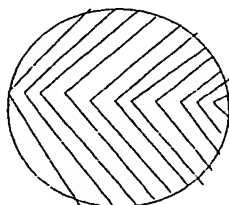
(54) Title: TARGET DESIGNS AND RELATED METHODS FOR ENHANCED COOLING AND REDUCED DEFLECTION AND DEFORMATION



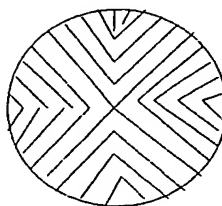
Concentric Grooves
Design #1 and #2



Spiral



"Side" Chevron



"Center" Chevron

(57) Abstract: A sputtering target is described herein that comprises: a) a target surface component comprising a target material; b) a core backing component having a coupling surface and a back surface, wherein the coupling surface is coupled to the target surface component; and c) at least one surface area feature coupled to or located in the back surface of the core backing component, wherein the surface area feature increases the effective surface area of the core backing component. Additional sputtering targets comprises: a) an integrated target surface component and core backing component, wherein the surface component and the backing component comprise the same target material or a material gradient; and b) at least one

surface area feature that is on or integrated into the core backing component, wherein the surface area feature increases the effective component of the core backing component. Methods of forming a sputtering target are also described that comprise: a) providing a target surface component comprising a surface material; b) providing a core backing component comprising a backing material and having a coupling surface and a back surface; c) providing at least one surface area feature coupled to or located in the back surface of the core backing plate, wherein the surface area feature increases the effective surface area of the core backing plate or providing at least one surface area feature coupled to or located in the coupling surface of the core backing component, wherein the surface area feature increases the effective surface area of the core backing component; and d) coupling the surface target material to the coupling surface of the core backing material.